

WHAT IS CLAIMED IS:

1. A method of alleviating or preventing the accumulation of ammonia in a medium comprising:

providing a bacterial strain that oxidizes ammonia to nitrite, wherein said bacterial strain
5 comprises a nucleotide sequence selected from the group consisting of: a nucleotide sequence
that has greater than 98% identity over the full length thereof to SEQ ID NO:3, a nucleotide
sequence that has greater than 98% identity over the full length thereof to SEQ ID NO:4, a
nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:1
and a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID
10 NO:2; and

introducing into the medium an amount of the bacterial strain sufficient to alleviate or
prevent the accumulation of ammonia in the medium.

2. The method of claim 1, wherein ammonia is reduced by at least 30% when compared
with a level of ammonia that would exist in the absence of the bacterial strain.

15 3. The method of claim 1, wherein the medium is an aquarium.

4. The method of claim 3, wherein the aquarium is a freshwater aquarium.

5. The method of claim 1, wherein the medium comprises wastewater.

6. The method of claim 1, wherein introducing into the medium an amount of the bacterial
strain further comprises placing the bacterial strain into the medium on a rotating biological
20 contactor.

7. The method of claim 1, wherein introducing into the medium an amount of the bacterial
strain further comprises placing the bacterial strain into the medium on a biofilter.

8. A method of alleviating or preventing the accumulation of ammonia in a medium
comprising:

25 providing a bacterial strain that oxidizes ammonia to nitrite, wherein said bacterial strain
comprises a nucleotide sequence selected from the group consisting of: a nucleotide sequence
that has greater than 96% identity over the full length thereof to SEQ ID NO:18, a nucleotide

sequence that has greater than 96% identity over the full length thereof to SEQ ID NO:19 and a nucleotide sequence that has greater than 96% identity over the full length thereof to SEQ ID NO:20; and

introducing into the medium an amount of the bacterial strain sufficient to alleviate or prevent the accumulation of ammonia in the medium.

9. The method of claim 8, wherein ammonia is reduced by at least 30% when compared with a level of ammonia that would exist in the absence of the bacterial strain..

10. The method of claim 8, wherein the medium is an aquarium.

11. The method of claim 10, wherein the aquarium is a freshwater aquarium.

12. The method of claim 10, wherein the aquarium is a seawater aquarium.

13. The method of claim 8, wherein the medium comprises wastewater.

14. The method of claim 8, wherein introducing into the medium an amount of the bacterial strain further comprises placing the bacterial strain into the medium on a rotating biological contactor.

15. The method of claim 8, wherein introducing into the medium an amount of the bacterial strain further comprises placing the bacterial strain into the medium on a biofilter.

16. A method of alleviating or preventing the accumulation of ammonia in a medium comprising:

providing a bacterial strain that oxidizes ammonia to nitrite, wherein said bacterial strain comprises a 16S rDNA nucleotide sequence set forth in a sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3 and SEQ ID NO:4; and

introducing into the medium an amount of the bacterial strain sufficient to alleviate or prevent the accumulation of ammonia in the medium.

17. A method of alleviating or preventing the accumulation of ammonia in a medium comprising:

providing a bacterial strain that oxidizes ammonia to nitrite, wherein said bacterial strain comprises a 16S rDNA nucleotide sequence set forth in a sequence selected from the group consisting of SEQ ID NO:18, SEQ ID NO:19 and SEQ ID NO:20; and

introducing into the medium an amount of the bacterial strain sufficient to alleviate or prevent the accumulation of ammonia in the medium.

18. A bioremediation process that alleviates or prevents the accumulation of ammonia in a medium comprising:

providing a bacterial strain that oxidizes ammonia to nitrite, wherein said bacterial strain comprises a nucleotide sequence selected from the group consisting of: a nucleotide sequence that has greater than 98% identity over the full length thereof to SEQ ID NO:3, a nucleotide sequence that has greater than 98% identity over the full length thereof to SEQ ID NO:4, a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:1 and a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:2; and

introducing into the medium an amount of the bacterial strain sufficient to remediate the medium.

19. A bioremediation process that alleviates or prevents the accumulation of ammonia in a medium comprising:

providing a bacterial strain that oxidizes ammonia to nitrite, wherein said bacterial strain comprises a nucleotide sequence selected from the group consisting of: a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:18, a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:19 and a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:20; and

introducing into the medium an amount of the bacterial strain sufficient to remediate the medium.

20. A method of alleviating or preventing the accumulation of ammonia in a medium comprising:

providing a composition comprising at least two bacterial strains that oxidize ammonia to nitrite, wherein each of the at least two bacterial strains have 16S rDNA including a nucleotide sequence independently selected from the group consisting of: a nucleotide sequence that has greater than 98% identity over the full length thereof to SEQ ID NO:3, a nucleotide sequence
5 that has greater than 98% identity over the full length thereof to SEQ ID NO:4, a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:1, a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:2, a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:18, a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:19
10 and a nucleotide sequence that has at least 96% identity over the full length thereof to SEQ ID NO:20; and

introducing into the medium an amount of the composition sufficient to alleviate or prevent the accumulation of ammonia in the medium.

21. The method of claim 19, wherein the composition comprises a bacterial strain with a 16S
15 rDNA including a nucleotide sequence as set forth in SEQ ID NO:1, a bacterial strain with a 16S rDNA including a nucleotide sequence as set forth in SEQ ID NO:2, a bacterial strain with a 16S rDNA including a nucleotide sequence as set forth in SEQ ID NO:3, a bacterial strain with a 16S rDNA including a nucleotide sequence as set forth in SEQ ID NO:4, a bacterial strain with a 16S rDNA including a nucleotide sequence as set forth in SEQ ID NO:18, a bacterial strain with a
20 16S rDNA including a nucleotide sequence as set forth in SEQ ID NO:19 and a bacterial strain with a 16S rDNA including a nucleotide sequence as set forth in SEQ ID NO:20.